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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/547,944	07/10/2006	Thomas M. Frimurer	64082(45579)	6463
21874 7590 07/06/2010 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205				
EXAMINER				
CLOW, LORI A				
ART UNIT		PAPER NUMBER		
1631				
MAIL DATE		DELIVERY MODE		
07/06/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/547,944

**Applicant(s)**

FRIMURER ET AL.

**Examiner**

LORI A. CLOW

**Art Unit**

1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 7-13, 32-34, 36 and 38-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 14-31, 35 and 37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Election/Restrictions**

Applicant's election without traverse of Group I in the reply filed on 15 April 2010 is acknowledged.

Claims 7-13, 32-34, 36, and 38-43 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species or invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 15 April 2010.

Claims 1-6, 14-31, 35, and 37 are examined herein.

### **Oath**

It appears as if Applicant intends to claim Foreign Priority to Danish Application PA 2003 00353, filed 4 March 2003. However, the Oath indicates, on the first page, that "no such foreign applications have been filed" (see checked box). Perhaps this is a typographical error. If so, please correct by re-submitting a new Oath.

### **Priority**

As indicated above, it appears as if Applicant intends to claim Foreign Priority based on an application filed in Denmark on 7 March 2003. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Until such time as the Oath is corrected and certified copies are received, the priority date accorded the instant Application is 5 March 2004 (the date of the PCT).

**Information Disclosure Statement**

No Information Disclosures Statement has been filed.

**Drawings**

The drawings are objected to because Figure 1 is difficult to read due to blurry lines. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**Specification**

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. See for example page 18, line 18.

**Sequence Compliance**

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR § 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR § 1.821 through 1.825 because pages 18-20 and 30 contain amino acid sequences without corresponding sequence identification numbers. Further, no sequence listing has been submitted. Applicants are given the same response time regarding this failure to comply as that set forth to respond to this office action. A complete response to this office action includes compliance with this sequence rule compliance requirement. Failure to comply may result in abandonment of this application.

**Claim Rejections - 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6, 14-31, 35, and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, “a pseudo-sequence method for comparing 7TM receptor with one or more further 7TM receptors with respect to the physicochemical properties”. There is insufficient antecedent basis in the claim for “the physicochemical properties”, as no such properties exist previously in the claim. Clarification is requested.

Claim 1 recites, “optionally, aligning part or all of the amino acid sequence of the first 7TM receptor with all or part of the amino acid sequence of the one or more further 7TM receptors”. It is unclear as to what this step is intended to perform if it is an optional step. If it is not performed, then steps ii, iii, iv, and v cannot be performed because there would be no sequence alignments. Therefore, the claim is interpreted to encompass only steps vi and vii, if step i is not performed. If step i is not performed, then claims 5, 6, 18-20, 30, 31, 35 cannot be performed. Prior art is applied accordingly. Clarification is requested.

Claim 1 recites “optionally, ranking the 7TM receptors with respect to the physicochemical properties of their binding sites according to the similarity scores obtained in step vi.” Again, this is an optional step and does not have to be performed. Prior art is applied accordingly. Clarification is requested.

Claim 4 recites, “a method according to claim 3 wherein the classification is made without using date...”. There is insufficient antecedent basis in the claim for “classification”, as no such “classification” was performed” in claim 3 or in claim 1, from which claim 3 depends. Clarification is requested.

**Claim Rejections - 35 USC § 101-Non-statutory Subject Matter**

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-6, 14-31, 35, and 37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-6, 14-31, 35, and 37 are drawn to a pseudo-sequence method for comparing a first 7TM receptor with one or more further 7TM receptors with respect to physicochemical properties of selected amino acid residues of their binding sites

In accord with the decision in *In re Bilski* (cited below), a claim to a process or method must meet the machine-or-transformation test in order to be eligible under 35 USC 101 as statutory subject matter (*In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008)). In other words, the prohibition on patenting abstract ideas has two distinct aspects: (1) when an abstract concept has no claimed practical application, it is not patentable; (2) while an abstract concept may have a practical application, a claim reciting an algorithm or abstract idea can state statutory subject matter only if it is embodied in, operates on, transforms, or otherwise is tied to another class of statutory subject matter under 35 U.S.C. §101 (i.e. a machine, manufacture, or composition of matter). (*Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ 673, 1972), as clarified in *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008) the test for a method claim is whether the claimed method is (1) tied to a particular machine or apparatus or (2) transforms a particular article to a different state or thing.

In the instant case, the method claims are not so tied to another statutory class of invention because the method steps that are critical to the invention are "not tied to any **particular apparatus or machine**" nor do they perform a transformation to a "different state or

thing” and therefore do not meet the machine-or-transformation test as set forth in *In re Bilski* 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008).

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 17, 21-29, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Lapinsh et al. (Protein Science (2002) Vol. 11; 795-805).

The instant claims are drawn to a method for comparing a first and subsequent 7TM receptors by generating a similarity score as defined by comparing the physicochemical descriptors of 7TM receptors.

In regard to claim 1, Lapinsh et al. teach a method wherein classification of G-protein coupled receptors is attained according to the principal chemical properties of their amino acid sequences. Primary amino acid sequences are translated into vectors based on the principal physicochemical properties of the amino acids and transformation of the data into a uniform matrix is applied (abstract).

In regard to claims 2 and 4, the comparison is made without data related to binding affinity (page 796, column 1 and 2).



In regard to claim 3, Lapinsh et al. teach using physicochemical properties (p. 802, column 2).

In regard to claim 17, the method may be computer implemented (page 796, column 1).

In regard to claim 21 and 22, Lapinsh et al. teach using transmembrane parts of the GPCRs 9which contain extracellular loops) (page 797, column 1).

In regard to claim 23, Lapinsh et al. teach physicochemical descriptors with interaction features (page 796, column 2).

In regard to claim 24, Lapinsh et al. teach hydrophobicity, for example, at page 796, column 2).

In regard to claim 25, Lapinsh et al. teach three-dimensional features (Figure 1).

In regard to claim 26, Lapinsh et al. teach PCA (page 797, column 2).

In regard to claims 27-29, Lapinsh et al. teach various physicochemical descriptors at page 797, column 2.

In regard to claim 37, Lapinsh et al. teach ranking (Table 2).

#### **Prior Art Made of Record**

The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Frimurer et al. (Proteins: Structures, Functions, and Genetics Vol. 35; 375-386

Jacoby et al. (Chem. Med. Chem. (2006) Vol. 1; 760-782)

Schmitt et al. (Journal of Molecular Biology (2002) Vol. 323; 387-406)

No claims are allowed.

### **Inquiries**

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The Central Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lori A. Clow, Ph.D., whose telephone number is (571) 272-0715. The examiner can normally be reached on Monday-Friday from 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached on (571) 272-0720.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

July 2, 2010  
/Lori A. Clow, Ph.D./  
Primary Patent Examiner  
Art Unit 1631